ENDOCRINE DISRUPTING CHEMICALS: A PAST, PRESENT AND FUTURE ISSUE

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The EDCs Challenge

A large variety of carbon based classes of chemicals derived from industry such as pesticides, packaging plastic industry materials and others like dioxins are known to act as endocrine disrupting chemicals, altering the function of the endocrine system and consequently causing adverse health effects in an intact organism, or its progeny.

Objectives

- Set a conceptual basis to understand the pathologies found on wildlife during field investigations.
- Introduce the lasts scientific research updates about the epigenetic mechanisms of action of EDCs.
- Popularize and establish awareness about the issue.

Features

- Lipophilicity
- Persistence
- Bioconcentration
- Biomagnification
- Omnipresence

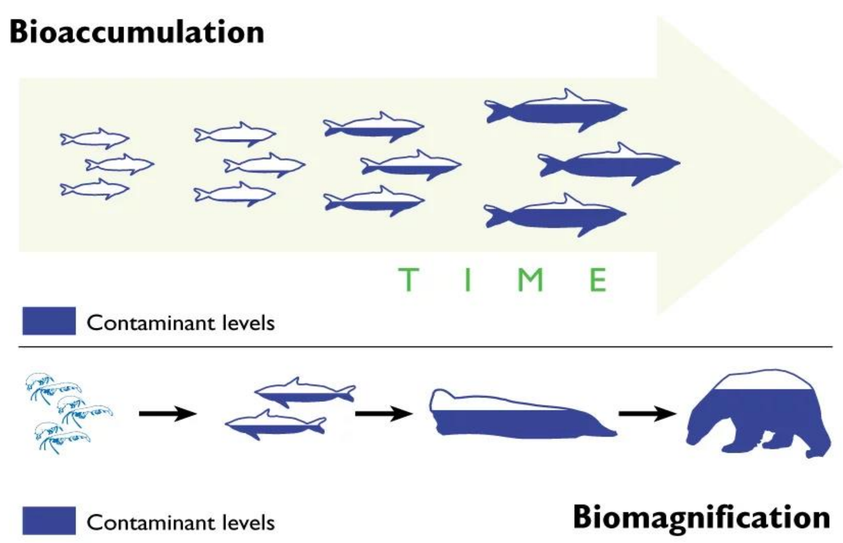


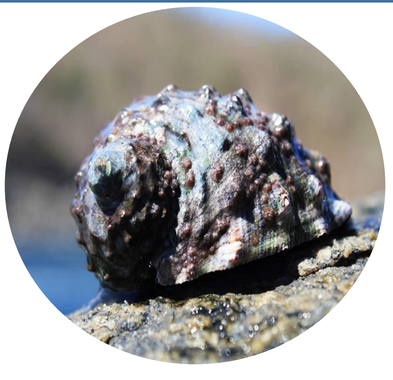
Image Source: Scripts Julie van der Hoop

Image Source: Oehme, M. 1995

Baltic Seal Disease Syndrome

Bird eggs thinning

GLEMEDS in colonial fish-eating birds



Masculinization in female marine snails

Lake Apopka alligators

Mechanisms of action

- Nuclear receptor-mediated mechanisms
- Non-receptor-mediated mechanisms

Conclusions

- Unpredictable net effects of the mixture of EDCs
- Knowledge gap exists to associate exposure to EDCs and disease
- Mechanisms underlying such associations are likely to be mediated by epigenetic changes
- Epigenetic effects is an expansion field of investigation to understand the organic effects.

DNA metylation

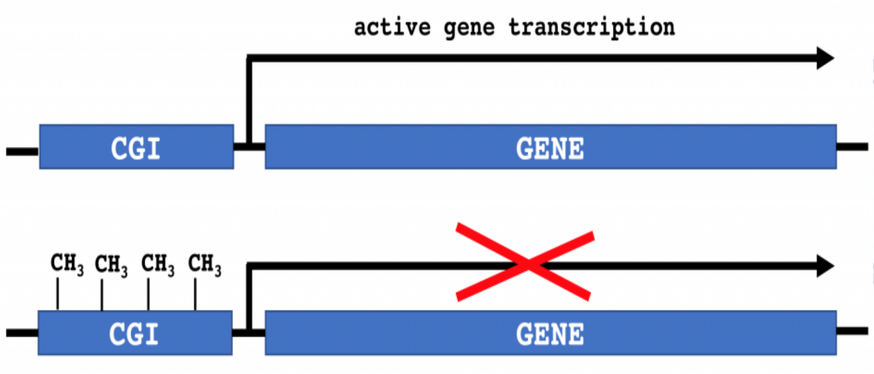


Image Source: Scripts Julie van der Hoop

Histone modifications

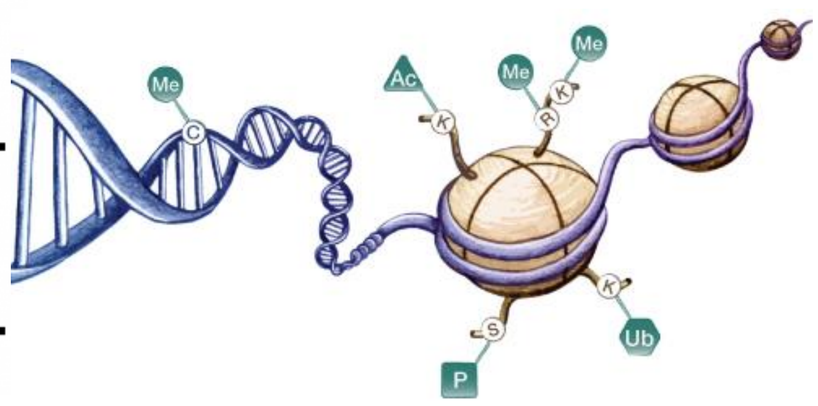


Image Source:Promega Connetcions

miRNA binding

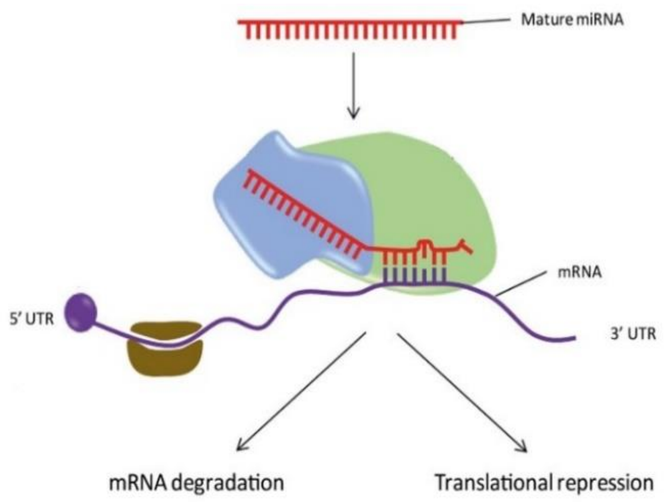


Image Source: Derghal et al. 2016, modified by Maria Capdevila